

charts as shown in FIGS. 4A, 4B and 4C. Each grid line chart consists of a series of numbered horizontal straight lines sequentially spaced an inch apart and visibly distinct in the scope at the indicated ranges. A target such as a prairie dog of 9 inch height is drawn to occupy the top nine lines of a chart, as shown in FIG. 4A, and placed at a range 100 yards. The scope is then sighted onto said 100 yard target, producing the view shown in FIG. 4B wherein the top of the prairie dog is placed at center point 26, and the bottom of the prairie dog falls between the third and fourth range marker lines, namely between 7.5 and 10.5 inches from center point 26. By interpolation, the bottom of the target is 9 inches from counterpoint 26. It is accordingly ascertained that the prairie dog target is located at a 100 yard shooting range.

It should be noted that the target heights subtended by the horizontal range marker lines increase in direct arithmetic proportion to the distance of the target. Therefore, at 200 yards, said first, second, third and fourth range marker lines measure targets of 4, 10, 15 and 21 inch heights, respectively. When the same 9 inch prairie dog target is viewed for example at 300 yards, the view through the scope is as shown in FIG. 4C, wherein the target appears much smaller because the range marker lines now correspond to progressive heights of 6, 15, 22.5 and 31.5 inches in descending order down said center vertical hairline. Now the bottom of the target will be located between the first and second range marker lines, corresponding to 3 inches at 100 yards. In order to determine the distance of the target, the height of the target is divided by the inch reading on the reticle corresponding to the line reading on the grid line chart. In this example, the 9 inch target would measure 3 inches on the reticle, accordingly, the target range is  $9 \div 3 = 3 \times 100$  or 300 yards.

Once the target range has been determined, the scope can be accurately aimed by centering upon the desired location of bullet impact the appropriate aiming point or approximation thereto along the vertical hairline.

FIG. 5 illustrates the reticle view with respect to a Rocky Mountain Elk having an estimated 25 inch chest height. It is seen that the 25 inch chest is spanned by about 5 inches worth of reticle distance. Accordingly, the range is  $25 \div 5 = 5 \times 100$  or 500 yards, and aiming point 33 is employed for shooting, centered upon the target.

FIG. 6A illustrates the sight picture for shooting at a 9 inch high prairie dog at 100 yards. FIG. 6B illustrates the sight picture for shooting at a 9 inch high prairie dog at 600 yards with a 10 m.p.h. left cross wind.

FIG. 7 illustrates the view through the scope when shooting at a target at 500 yards.

FIGS. 8 and 9 illustrate adjusted aiming points to compensate for 10 m.p.h. and 20 m.p.h. right-to-left cross winds, respectively.

FIG. 10 illustrates the adjusted aiming point for a 20 m.p.h. right-to-left vertical component of wind deflection. The rifleman's idiom designates this as a Magnus effect, but is actually Yaw of Repose, the vertical element of a gyroscopically spinning missile. The formula for evaluating the potential worst case effect of Magnus is to adjust  $\frac{1}{4}$ th the total value by sliding that point onto the target. In the example of FIG. 10 we see the aiming point as an interpolated point left one equal wind bar (10 m.p.h.) and  $\frac{1}{4}$  above the left tip of said third range marker line. A low-drag high-speed bullet may react to Magnus only a small percentage of the adjustment in FIG. 10. However, hunting bullets do not fall into this category. The rule is to construct a "kill zone" on the target and then hold "worst and best" Magnus movement so that the bullet is accurately aimed.

FIG. 11 illustrates a sight picture and aiming point for six factor rifle at a 45 degree up hill shot at 500 yards slant range. The appropriate sighting adjustment in such situation is to move up one range marker line for a 45 degree angle, twice that for a 60 degree angle, and one half for a 30 degree angle.

It is to be noted that specialized reticles may be needed for each particular rifle/cartridge combination and scope magnification. It is further to be noted that the shooter need not divert his attention from the image in the scope for determining distance and other corrections and finding the proper aiming point. Accordingly, the telescopic gunsight of this invention is particularly well suited to shooting moving targets.

It is to be noted that the final sight picture, corrected for external ballistics, results in a straight line aim at the target in the same manner as a point blank range would result. This enables the shooter to have much more confidence in the result.

Definitions and explanation of certain terms employed herein are contained in the ADDENDUM forming a part of this specification.

While particular examples of the present invention have been shown and described, it is apparent that changes and modifications may be made therein without departing from the invention in its broadest aspects. The aim of the appended claims, therefore is to cover all such changes and modifications as fall within the true spirit and scope of the invention.

Having thus described my invention, what is claimed is:

1. In a telescopic gunsight having an optical system comprised of a forward objective lens element, a rear eyepiece lens element and intervening erector lens element, said elements being aligned upon an optical axis constituting a line of sight and protectively confined within an elongated tubular housing adapted to be securely affixed to a rifle, the improvement comprising the addition into said optical system between said objective and erector lens elements of a transparent reticle having distance-measuring and aiming indicia, said indicia comprising orthogonally intersecting center vertical and center horizontal straight hairlines, said center vertical and center horizontal hairlines having radially distal portions which are widened so as to form posts having radially directed innermost and outermost extremities, and four straight horizontal range-marker hairlines of sequentially incremental length disposed below said center horizontal hairline in vertically bisected relationship with said center vertical hairline.

2. The telescopic gunsight of claim 1 wherein the intersection of said center vertical and center horizontal hairlines constitutes a center point which defines a bullet impact point at 100 and 200 yards.

3. The telescopic gunsight of claim 2 wherein the sites of intersection of said first, second, third and fourth range-marker hairlines with said vertical hairline constitute first, second, third and fourth alternative bullet impact points, respectively, at ranges of 300, 400, 500 and 600 yards, respectively.

4. The telescopic gunsight of claim 1 wherein the innermost extremities of said posts are disposed upon a circular locus about said center point.

5. The telescopic gunsight of claim 1 wherein the dimension of the various features of said reticle correspond to inches of subtention at 100 yards.

6. The telescopic gunsight of claim 5 wherein the width of the unwidened portions of said center vertical and center horizontal hairlines is 0.6 inches.

11

7. The telescopic gunsight of claim 5 wherein the distance between said center point and the innermost extremities of said posts is 25 inches.

8. The telescopic gunsight of claim 5 wherein the distances of separation of said range marker lines from said center point are such as to cause the sequential spacing between said range marker lines to progressively increase.

9. The telescopic gunsight of claim 5 wherein the distances of separation of said first, second, third and fourth

12

range marker lines from said center point are 2.0, 4.8, 7.5 and 10.5 inches, respectively.

10. The telescopic gunsight of claim 5 wherein the lengths of said first, second, third and fourth range marker lines are 4.12, 5.90, 8.32 and 9.72 inches, respectively.

\* \* \* \* \*